

## WHAT IS CLAIMED IS:

- 1     1.     A starter comprising:
  - 2             a motor for generating a rotating force for an armature;
  - 3             a planetary reduction assembly for reducing rotation of said armature
  - 4     through a planetary gear;
  - 5             a power transmission device formed into a cylindrical configuration and
  - 6     integrated with a carrier made to support said planetary gear for transmitting
  - 7     rotation of said carrier;
  - 8             an output shaft whose motor-side end portion is spline-fitted in an inner
  - 9     circumference of said power transmission device so that said output shaft is
  - 10    movable by a predetermined quantity in its axial directions with respect to said
  - 11    power transmission device;
  - 12             a pinion shaft fitted through a pinion bearing over an outer circumferential
  - 13    surface of said output shaft to be rotatable;
  - 14             a pinion provided at an end portion of said pinion shaft on an opposite side
  - 15    to a motor to be rotated integrally with said pinion shaft;
  - 16             a one-way clutch for transmitting rotation of said output shaft to said
  - 17    pinion shaft; and
  - 18             a housing including a housing bearing located between said pinion and
  - 19    said one-way clutch to support said pinion shaft so that said pinion shaft is
  - 20    rotatable and slidable,
  - 21             said output shaft being made to be moved integrally with said pinion shaft
  - 22    and said one-way clutch in an opposite-of-motor side direction when an engine is
  - 23    placed into a cranking condition so that said pinion engages with a ring gear of
  - 24    said engine.
- 1     2.     The starter according to claim 1, wherein, when said pinion shaft, together
- 2     with said output shaft, is moved in the opposite-of-motor direction up to a position
- 3     at which said pinion engages with said ring gear, a pinion-side end portion of said

4 pinion bearing protrudes toward a pinion side with respect to a pinion-side end  
5 portion of said housing bearing.

1 3. The starter according to claim 1, wherein said pinion bearing includes a  
2 first pinion bearing for supporting an opposite-of-motor side end portion of said  
3 output shaft and a second pinion bearing located on a motor side with respect to  
4 said first pinion bearing.

1 4. The starter according to claim 1, wherein said pinion bearing is made to  
2 support a portion between an opposite-of-motor side end portion of said output  
3 shaft and an inner diameter side of an inner portion constituting said one-way  
4 clutch.

1 5. The starter according to claim 1, wherein said one-way clutch has a  
2 cylindrical portion to cover an outer diameter portion of an opposite-of-motor end  
3 portion of said power transmission device when said pinion is in a resting  
4 condition.

1 6. The starter according to claim 1, wherein a motor-side end portion of said  
2 output shaft, which has said spline, is recessed into a cylindrical configuration and  
3 an end portion of a shaft of said armature is inserted through a bearing into the  
4 interior of said cylindrical configuration.